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NORTHEASTERN RESEARCH NOTES

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MOWING OF NORTHERN HARDWOOD REPRODUCTION NOT PROFITABLE

Many northern hardwood stands in the Northeast contain a number of large, worthless trees that were left over from earlier logging jobs. The seedlings and saplings under such stands are usually misshapen by having been overtopped and suppressed for years.

Girdling of worthless old holdovers has long been recommended as an effective way to give young trees room to grow. Mowing has been suggested as a way to convert misshapen seedlings into well-formed seedling sprouts.

A study was begun on the Green Mountain National Forest 16 years ago to test the relative merits of girdling and mowing. Results of the study bear out the value of girdling; but the gain from mowing does not seem large enough to justify it.

The Study

Three 5-acre plots were used, in an uneven-aged, old-growth northern hardwood stand. The stand had a well-stocked understory of timber and weed species. Trees 12 inches and larger in diameter at breast height were logged off before the study was begun.

On one plot, the worthless old holdovers were girdled to give the seedlings room to grow. On the second plot, the holdovers were girdled; and, in addition, all hardwood stems 6 inches or less in diameter were mowed down with ax and brush scythe. The third plot was not treated.

Sixteen years later, the stocking, composition, growth, and form of the trees on the three plots were compared.

The Results

Girdling increased the stocking of sugar maple, yellow birch, and beech saplings larger than $\frac{1}{2}$-inch d.b.h. from 700 per acre (on the untreated plot) to 2,000 per acre. Mowing increased the stocking a little more, to 2,400 per acre.

The composition of the young growth was also improved. When the study was begun, sugar maple was the most important species in the understory, beech a close second; yellow birch accounted for only a few percent of the total. Sixteen years later, sugar maple made up 2/3 of the stems 0.6 inches and larger on all plots. On the mowed plot, a good stand of yellow birch took over from beech the number 2 position. On the girdled but unmowed plot, the stand of

yellow birch was even better.

The distribution of crop trees was improved by both treatments. On the girdled plot, 75 percent of the milacres contained well-established trees of timber species--either dominant cr overtopped only by short-lived weed species. On the plot that was mowed, 78 percent of the milacres had desirable crop trees. On the untreated plot only 39 percent had.

Except for beech, the saplings on the treated plots were larger than those on the untreated plot. Sugar maple and weed species averaged about one-half inch larger, yellow birch somewhat less. But beech saplings on the untreated plot averaged almost 1 inch larger than those on treated plots.

Conclusions

Judging from average diameter, there was little gain from mowing. Saplings on the mowed plot (except yellow birch) were mostly 16-year-old seedling sprouts, while stems of the same size on the girdled but unmowed plot were much older. The accelerated growth rate of the seedling sprouts--which will not be maintained--has served to offset the sacrifice of established reproduction that was mowed down.

The sprouts that came in after mowing generally had straighter stems, fewer whip-like stems, and a larger proportion of the crowns were well developed and reasonably symmetrical. On the mowed plot, 66 percent of the potential crop trees had good or fair form, compared to 55 percent on the unmowed plot. But the unmowed plot had ample stems of good form; so it is

likely that differences in form quality will disappear as the stand develops.

Girdling in this study required 4 to 5 man-hours per acre. Mowing required 9 to 13 man-hours. The slight improvement of reproduction that is gained by mowing certainly does not justify the expenditure of 9 to 13 man-hours per acre.

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SOME RECENT PUBLICATIONS

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Bickford, C.A. *Form-class volume tables for estimating board-foot content of northern conifers.* Northeast. Forest Expt. Sta. Paper 38. 33 pp., illus. 1951.